

MRID #: 40263001
PC Code No. : 105501
EFGWB Out : 3/3/93

TO: Linda Propst
Product Manager Team Reviewer
Reregistration Division (H7505C)

FROM: Elizabeth Behl, Head
Ground Water Technology Section
Environmental Fate & Ground Water Branch/EFED (H7507C)

THRU: Henry Jacoby, Chief
Environmental Fate & Ground Water Branch/EFED (H7507C)

Attached, please find the EFGWB review of...

Reg./File # : _____

Common Name : Tebuthiuron

Product Name : Perflan, Graslan, Herbic, Spike

Company Name : DowElanco

Purpose : Review of tebuthiuron ground-water monitoring report

Type Product : Herbicide

Action Code : 660 EFGWB #(s): 90-0361 Total Review Time = 0.4 days

EFGWB Guideline/MRID/Status Summary Table: The review in this package contains...

161-1		162-4		164-4		166-1	
161-2		163-1		164-5		166-2	
161-3		163-2		165-1		166-3	
161-4		163-3		165-2		167-1	
162-1		164-1		165-3		167-2	
162-2		164-2		165-4		201-1	
162-3		164-3		165-5		202-1	

Y = Acceptable (Study satisfied the Guideline)/Concur P = Partial (Study partially satisfied the Guideline, but additional information is still needed)
S = Supplemental (Study provided useful information, but Guideline was not satisfied) N = Unacceptable (Study was rejected)/Non-Concur

Use this form for individual studies & to submit pesticide applications.

United States Environmental Protection Agency Office of Pesticide Programs Washington, DC 20460 Data Review Record <i>Confidential Business Information - Does not contain National Security Information (E.O. 12065)</i>					Pack Number <div style="font-size: 1.2em; text-align: center;">50082</div> <div style="text-align: center;">EFED</div>	Date Received <div style="font-size: 1.2em; text-align: center;">2-6-90</div>
1. Product Name					Chemical Name TEBUTHIURON 105501-1	
2. Identifying Number 0054	3. Record Number 258,852	4. Action Code 660	5. MRID/ Accession Number A0263001	6. Study Guideline or Narrative 163-1 Leaching/Adsorp/Desorp.		
7. Reference No. 1	8. Date Rec'd (EPA) 7-16-87	9. Prod/Review Mgr/DCI CAROL PETERSON	10. PM/RM Team No. 74	11. Date to HED/ EFED/RD/BEAD 2-2-90	12. Proj Return Date 5-2-90	13. Date Returned to RD/SRRD
Instructions <div style="font-size: 1.1em;">FOR PRIORITY REVIEW AS INDICATED IN THE REGISTRATION STD.</div>						
This Section Applies to Review of Studies Only						
14. Check Applicable Box <input type="checkbox"/> Adverse 6(a)(2) Data (405) <input type="checkbox"/> Special Review Data (870) <input checked="" type="checkbox"/> Generic Data (Reregistration)(660) <input type="checkbox"/> Product Specific Data (Reregistration)(655)					15. No. of Individual Studies Submitted <div style="font-size: 1.2em; text-align: center;">1</div>	
16. Have any of the above studies (in whole or in part) been previously submitted for review? <input type="checkbox"/> Yes (Please identify the study(ies)) <input checked="" type="checkbox"/> No					17. Related Actions	
18.	To	Type of Review	19. Reviews Also Sent to		20. Data Review Criteria	
HED		Science Analysis & Coordination	<input type="checkbox"/> SAC	<input type="checkbox"/> PC	A. Policy Note No. 31 <input type="checkbox"/> 1 = data which meet 6(a)(2) or meet 3(c)(2)(B) flagging criteria <input checked="" type="checkbox"/> 2 = data of particular concern from registration standard <input type="checkbox"/> 3 = data necessary to determine tiered testing requirements	
		Toxicology/HFA	<input type="checkbox"/> TOX/HFA	<input type="checkbox"/> PL		
		Toxicology/IR	<input type="checkbox"/> TOX/IR			
		Dietary Exposure	<input type="checkbox"/> DEB	<input type="checkbox"/> EA		
		Nondietary Exposure	<input type="checkbox"/> NDE	<input type="checkbox"/> AC		
EFED	<input checked="" type="checkbox"/>	Ecological Effects		<input type="checkbox"/> BA	B. Section 18 <input type="checkbox"/> 1 = data in support of section 3 in lieu of section 18 C. Inert Ingredients <input type="checkbox"/> 1 = data in support of continued use of List 1 inert	
	Environmental Fate & Groundwater	<input type="checkbox"/> EEB				
SRRD		Special Review	<input type="checkbox"/> EFGWB			
		Reregistration				
		Generic Chemical Support	<input type="checkbox"/> SR			
RD		Insecticide-Rodenticide	<input type="checkbox"/> RER			
		Fungicide-Herbicide	<input type="checkbox"/> GSC			
		Antimicrobial				
		Product Chemistry	<input type="checkbox"/> IR			
		Precautionary Labeling	<input type="checkbox"/> FH			
BEAD		Economic Analysis	<input type="checkbox"/> AM			
		Analytical Chemistry				
		Biological Analysis				
<input type="checkbox"/> Confidential Statement of Formula (EPA Form 8570-4) Attached (Trade Secrets)			<input type="checkbox"/> Label Attached		2	

1. CHEMICAL:

Chemical name: N-[5-(1,1-Dimethyl ethyl)-1,3,4-thiadiazol-2-yl]-N,N'-dimethylurea

Common name: Tebuthiuron

Trade names: Herbic, Graslan, Perflan, Spike

2. TEST MATERIAL:

Clay pellets, various formulations

3. STUDY/ACTION TYPE

Review of tebuthiuron ground-water monitoring report.

4. STUDY IDENTIFICATION:

Title: Residue of Tebuthiuron in Water from Wells Near Tebuthiuron-Treated Areas.

Authors: DG Saunders and EW Day

Prepared by: Lilly Research Laboratories
Greenfield, Indiana 46140

5. REVIEWED BY:

Kevin Costello, Hydrologist
OPP/EFED/EFGBW/GWTS

Signature: Kevin Costello

Date: 3-3-93

6. APPROVED BY:

Elizabeth Behl
Section Chief
OPP/EFED/EFGBW

Signature: E. Behl

Date: 3-3-93

7. CONCLUSIONS:

This report has been submitted as evidence of the potential of tebuthiuron to leach to ground-water near fields treated with the pesticide. Ground-water samples were collected from wells or near sites studied in 4 different states. Each site was sampled 6 to 8 times over a four year period, for a total of 90 samples. One sample of the 90 analyzed had a detection of tebuthiuron. The report claims that it is very unlikely that this sample could have been contaminated due to leaching through the soil column.

It is not inconceivable that the single detection of tebuthiuron was a result of contamination during sampling, because the design of the study was such that actual leaching of tebuthiuron to the groundwater would be difficult to monitor. Although this report was not submitted to fulfill a specific EPA study requirement, it most closely resembles a small scale prospective study. However, this report fails to meet many guidelines set by EPA to assure that the data obtained from such a study is meaningful.

The following is an accounting of the aspects of this study that prevent a meaningful determination of the potential of tebuthiuron to leach to ground water:

Site Topography- In order to limit the amount of the applied chemical that is lost from the study site by runoff and erosion, a slope of 0 to 2% is preferred. Only the Plains, TX site meets this guideline. The predominant soil at the Gentry, AR site is described in the report as having a slope of 5-50%.

Site Soil Texture- The soil adsorption coefficient of tebuthiuron is reported as ranging from 0.2 for a sand soil to 10 for a muck soil. In order to best evaluate the potential of a chemical to leach to ground water, its behavior in a "worst-case scenario" for leaching is preferred, in this case a sand soil. None of the four sites described in this report would qualify as "worst case" for soil texture. The Georgia site has sandy loam underlain by clay loam. The Arkansas site has a stony silt loam, and the Oklahoma site a loamy sand. The Texas site has 20 inches of sand, but this is underlain by clay loam, and then by a caliche rock layer at 3 feet which would form a nearly impermeable layer between soil water and the deeper ground water.

Well Selection- Insufficient information was provided in the report to give a complete description of the wells sampled in this study, but the information provided is sufficient to know that the wells chosen were poorly suited for the stated goals of the study. The samples collected for the study were from the existing wells nearest to the application area. As a result, only two wells each were sampled in Texas and Georgia, and a single well each in Oklahoma and Arkansas. Furthermore the wells in Georgia and Arkansas were not within the application area, but 100 to 200 feet away.

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The fact that two of the sites have a single well, and the other two have only two wells, means there was no sure way to determine ground-water flow direction. The topography of the sites is not provided in the report, either, beyond reporting the range of soil slopes. The direction of ground-water flow would be especially informative for these sites, because the wells sampled are quite deep:

Georgia	50 feet each;
Texas	180 and 212 feet;
Arkansas	100 feet;
Oklahoma	210 feet.

It is possible that the shallower wells sampled outside of their respective treated fields would be of more use than the deep wells within the fields, depending on the direction of ground-water flow, as well as the screened interval of the wells and depth to the water table (which were also not provided).

Summary

The submission of this study does not clarify whether tebuthiuron will leach to ground water under normal agricultural practices, and therefore does not fulfill any requirements of the Ground-Water Data Call-In. The single detection of tebuthiuron in one sample during this study cannot be confirmed to be a result of leaching through the soil column. By the same token, the failure to detect tebuthiuron in the other 89 samples collected is not an indication of an unlikelihood to leach, but is rather more likely an artifact of poor study design.

A more recent report, titled, "Tebuthiuron Small Scale Retrospective Groundwater Study at Kenedy Ranch, Sarita, Texas", (EFGWB study # 92-1186) shows that tebuthiuron is sufficiently mobile and persistent to leach to ground water, and remain in ground water at detectable concentrations four years after application. It further shows that at sites with a restrictive layer in the soil column, such as the caliche layer present at the Texas site in the study rejected above, that tebuthiuron tends to accumulate and persist above the restricting layer. These characteristics of the chemical may have been revealed in this study if it had been more carefully designed.